8th Grade
Main Rangefinder 4

It is important that you explain and show how you solved the problems on this assessment. If you use a ca… you set up the math.

Appropriate processes accurately completed

❶ Manuel, Sam and five of their friends ar… dinner. A pizza costs $4.99 plus $0.75 per topping.

a. Find the cost of each pizza they ordered … ll in the appropriate spaces in the chart below. Do not include sales tax.

Toppings	Pizza 1	Pizza 2	Pizza 3	Pizza 4	Pizza 5
Olives					X
Mushrooms					X
Pineapple				X	
Sausage		X			X
Pepperoni		X	X		X
…on		X		X	X
	X				X
…ithout tax	$5.74	$7.24	$5.74	$6.49	$9.49

Pizza 1 = $4.99 + .75 = 5.74
Pizza 2 = $4.99 + 2.25 = 7.24

X = topping was ordered

Pizza 3 = $4.99 + .75 = $5.74
Pizza 4 = $4.99 + 1.50 = $6.49

Advanced application of basic skills

b. What is the **total** cost of the five pizzas, including a 5% sales tax? *Show or explain how you found your answer.* $5.74 + $7.24 + $5.74 + $6.49 + $9.49 = $34.70 (without tax)

$34.70 × .05 = $1.74

$34.70 + $1.74 = $36.44 is the total cost

c. Each pizza has 8 slices. Sam plans to eat two slices from each pizza. What fraction of all the pizzas does he plan to eat? What percent is this? *Show or explain how you found your answer.*

8·5 = 40 slices
Sam will eat 2·5 = 10 slices

He plans to eat 10/40 slices, 1/4 of the pizza.

1/4 = 25%
1 ÷ 4 = .25
.25 = 25%

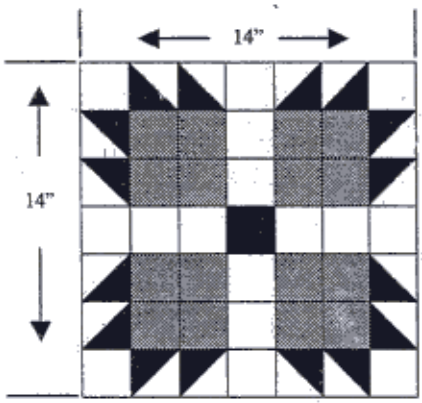
d. Each person pays for his share of the total cost based on the amount of pizza he eats. How much should Sam pay? *Show or explain how you found your answer.*

Sam is eating 1/4 of the pizza so he should pay 1/4 of $36.44

$36.44 ÷ 4 = $9.11 Sam should pay $9.11

Read problems 2, 3, 4 and 5 on the next few pages. Select three problems to answer. Answer ALL of the parts of the three problems you select to answer. Cross out the one problem that you do not choose to answer.

❷ The quilt block pictured below is called a "Bear's Paw." It is made by sewing together squares and triangles. Some pieces are black, while others are white or gray. Use the block to answer the questions.



Advanced use of symbols and communication skills

Advanced mathematical vocabulary

a. If the completed "Bear's Paw" block is 14 inches by 14 inches, what is the area that is shaded black? *Show or explain how you found your answer.*

The total area of the block is 196 $in.^2$. There are 9 black squares. Each square is 2 in. by 2 in. ($4 in.^2$). 9 squares times $4 in.^2$ equals $36 in.^2$.

$9 \cdot 4 in.^2 = 36 in.^2$ The black area equals $36 in.^2$.

b. What fraction of the total "Bear's Paw" block is shaded black? *Show or explain how you found your answer.*

Black Area: $36 in^2$

Total Area: $196 in.^2$ $= 18\%$ $\frac{18}{98} = \frac{9}{49}$

Advanced understanding of situations

Effective problem-solving strategies

eds to cut 2 ½ inch by 2 ½ inch squares from a piece of black material that is 44 inches wide and 36 inches long. What is the maximum number of squares she can cut from this piece of material? *Show or explain how you found your answer.*

$36 \div 2.5 = 14.4$ (14 squares from that side)

$44 \div 2.5 = 17.6$ (17 squares from that side)

~~$A = bh$~~ so $14 \cdot 17 = 238$ squares can be cut

36 | 14 $A = bh$

17

44

❸ Students were surveyed to find out how many pets their families owned.

a. Use the given data to complete the frequency table.

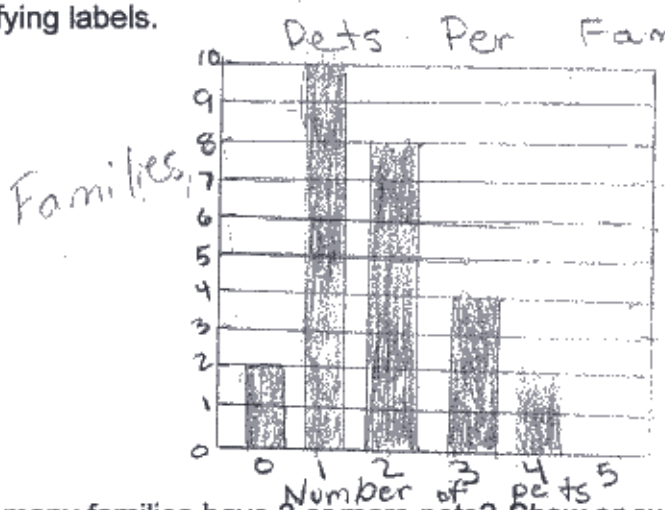
PETS PER FAMILY

~~3, 1, 2, 1, 4, 2, 1, 2, 1, 2, 0, 3, 1, 2, 2, 3, 2, 2, 4, 1, 1, 1, 1, 0, 1, 3~~

Frequency Table for Pets per Family

Pets per Family	Tally	Frequency
0	II	2
1	~~HH~~ ~~HH~~	10
2	~~HH~~ III	8
3	IIII	4
4	II	2
5		0

b. Graph or plot this data in the space provided below. Be sure to include appropriate identifying labels.



Appropriate processes accurately completed

c. How many families have 2 or more pets? *Show or explain how you found your answer.*

8 + 4 + 2 = 14 families

8 (2 pets) + 4 (3 pets) + 2 (4 pets) = 14

Minimal or non-existent errors

e. What is the mean number of pets per family? What is the mode? *Show or explain how you found your answer.*

mean

2 + 10 + 8 + 4 + 2 = 26

26 ÷ 5 = 5.2 pets

5 pets if you round it.

Mode

1 Pet

10 families have 1 pet, more than any other number.

❹ Ron, Leora and Susan all work at the s… hey get … s well as … e. They each ma… based … ce.

Higher-order thinking skills

Advanced mathematical vocabulary

Advanced use of symbols and communication skills

a. … e is $5.00 more … ge, and S… ora's wage, write an … ebraic expression fo… wages. Be s… e to explain your variables.

Ron:

$5.00 + L = R

L = Leora's hourly wage

R = Ron's hourly wage

Leora:

R − $5.00 = L

S/2 + $10.00 = L

R = Ron's hourly wage

S = Susan's hourly wage

L = Leora's hourly wage

Susan:

S = L2 − $10.00

S = Susans hourly wage

L = Leora's hourly wage

b. If Leora's hourly wage is $8.00, what are Ron's and Susan's wages? *Show or explain how you found your answer.*

Ron

$5.00 + 8.00 = R

$13.00 = Ron's hourly wage

Susan

S = 8·2 − $10.00

S = $16 − 10.00 = $6

Susan's hourly wage

Susan gets $6.00 per hour

c. If, in one week, Ron worked for 32 hours and got $56.25 in tips, how much did he earn? *Show or explain how you found your answer.*

$13.00 an hour times 32 hours = $416 plus tips ($56.25)

$416 + $56.25 = $472.25

Ron earned $472.25

Advanced application of basic skills

… r the Department of Fish and Game. To discover how healthy a pond is, … n estimate of the number of fish in the pond. He asked his son Mark for help.

a. They captured 8 trout, 6 bass and 3 catfish. They tagged and released the fish. They later captured 60 fish. Five of the fish in the second capture had tags. About how many fish are in the pond? *Show or explain how you found your answer.*

b. If you go fishing in this pond, what is the probability that the first fish you catch will be a trout? *Show or explain how you found your answer.*

c. How many of **each** type of fish are there likely to be in the pond if the ratio of trout to bass to catfish in the pond is the same as in the first capture? *Show or explain how you found your answer.*